

Exam Review

Part 1 Physics

A. Metric conversion

- i) $250 \text{ mm} = \underline{0.00250}$ hm ✓
ii) $0.005 \text{ km} = \underline{5}$ m ✓
iii) $28.9 \text{ Dm} = \underline{28900}$ cm ✓
iv) $0.2 \text{ dm} = \underline{0.00002}$ km ✓
- Handwritten metric prefixes: km, hm, Dm, m, cm, mm*

B. Significant Digits

- i) 0.0048 2 ✓ ii) 7580 3 ✓ iii) 420.0 4 ✓
iv) 8000 1 ✓ v) 0.0240 3 ✓ vi) 14.080 5 ✓

S.Digits Continued

- i) $1.41 + 8.6 = \underline{10.01} = 10.0$ ✓
ii) $15 \times 5.65 = \underline{84.75} = 85$ ✓
iii) $250/2.75 = \underline{90.909090} = 91$ ✓
iv) $14 - 10.755 = \underline{3.245} = 3$ ✓

C. Scientific Notation

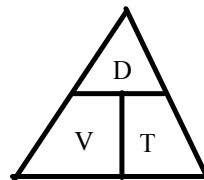
i) $875600000 = 8.756 \times 10^{18}$

ii) $0.000000254 = 2.54 \times 10^{-7}$

iii) $6.76 \times 10^{-6} = 0.00000676$

iv) $2.9 \times 10^{10} = 29000000000$

d. Distance, Velocity, Time



ex. Sue travelled 500 km in 1.5 hrs. What was her speed?

D - 500 km
V - ?
t - 1.5 hrs

$$V = \frac{d}{t} = \frac{500 \text{ km}}{1.5 \text{ hrs}} = 333.33 \text{ km/hr}$$

ex. Art drove 350 km at 85 km/hr. How long did it take him to reach his destination?

D - 350 km
V - 85 km/hr
t - ?

$$t = \frac{d}{v} = \frac{350 \text{ km}}{85 \text{ km/hr}} = 4.12 \text{ hrs}$$

E. Acceleration

$$V_i = V_f - a(t_f - t_i)$$

$$\text{km/hr/s} \quad \text{m/s/s or m/s}^2$$

ex. Ben increased the speed of his ATV from 15 km/hr to 40 km/hr in 8 sec. What was his acceleration?

$$\begin{aligned}
 a &= ? \\
 V_i &= 15 \text{ km/hr} \\
 V_f &= 40 \text{ km/hr} \\
 t_i &= 0 \text{ s} \\
 t_f &= 8 \text{ s}
 \end{aligned}
 \quad
 a = \frac{V_f - V_i}{t_f - t_i}
 = \frac{40 \text{ km/hr} - 15 \text{ km/hr}}{8 \text{ s} - 0 \text{ s}}
 = \frac{25 \text{ km/hr}}{8 \text{ s}}
 = 3.13 \text{ km/hr/s}$$

ex. Emma was driving 65 km/hr and accelerated 5 km/hr/s for 6 sec. What was her final speed?

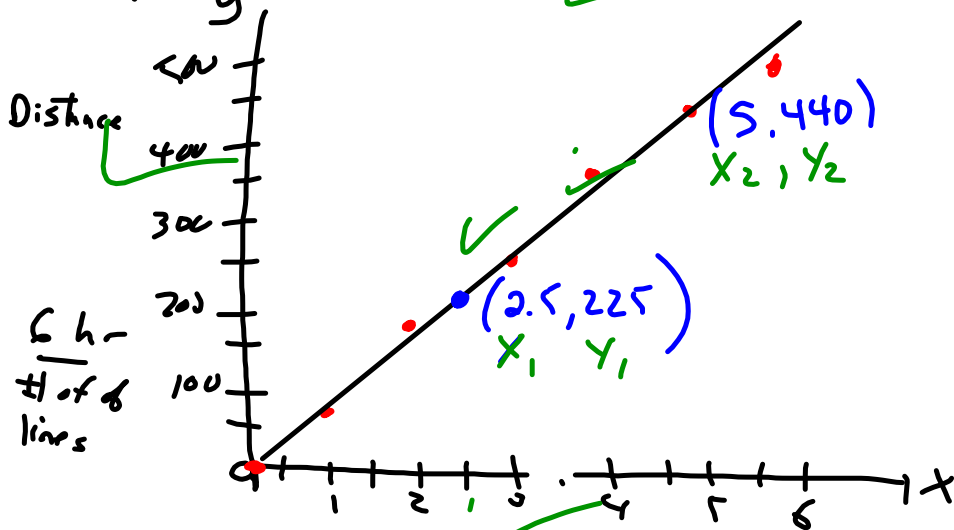
$$\begin{aligned}
 a &= 5 \text{ km/hr/s} \\
 V_i &= 65 \text{ km/hr} \\
 V_f &= ? \\
 t_i &= 0 \text{ s}^* \\
 t_f &= 6 \text{ s}
 \end{aligned}
 \quad
 \begin{aligned}
 V_f &= V_i + a(t_f - t_i) \\
 &= 65 \text{ km/hr} + 5 \text{ km/hr/s} \times (6 \text{ s} - 0 \text{ s}) \\
 &= 65 \text{ km/hr} + 5 \text{ km/hr/s} \times (6 \text{ s}) \\
 &= 65 \text{ km/hr} + 30 \text{ km/hr} \\
 &= 95 \text{ km/hr}
 \end{aligned}$$

ex. Tom accelerated at a rate of 10 m/s² for 4 sec. If his final speed was 52 m/s, what was his initial speed? 360 m/s in km/hr

$$\begin{aligned}
 a &= 10 \text{ m/s}^2 \\
 V_i &= ? \\
 V_f &= 52 \text{ m/s} \\
 t_i &= 0 \text{ s} \\
 t_f &= 4 \text{ s}
 \end{aligned}
 \quad
 \begin{aligned}
 V_i &= V_f - a(t_f - t_i) \\
 V_i &= 52 \text{ m/s} - 10 \text{ m/s}^2 (4 \text{ s}) \\
 &= 52 \text{ m/s} - 40 \text{ m/s} \\
 &= 12 \text{ m/s} \times 3.6 = 43.2 \text{ km/hr}
 \end{aligned}$$

F. Distance/Time Graph

Speed of Car Title



T (hr)	D (km)
0	0
1	75
2	180
3	250
4	350
5	440
6	500

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Time

$$\frac{440 - 225}{5 - 2.5} = \frac{215}{2.5} = 86 \text{ km/hr}$$

23.9 m/s

$\div 3.6$